Theme of 2026 KSBNS symposia

1. Molecular and Cellular Neuroscience

A. Development

Neurogenesis, stem cells, neuronal differentiation, glial differentiation, assembly of neural circuits, microglial and neuroimmune cells, axon growth and guidance, dendritic growth and branching, synapse formation and pruning, neurotransmitters, neurotrophins/growth factors, cytokines, transplantation (pluripotent donor cells), regeneration (molecular reprogramming), iPSCs, organoids.

B. Cells: Neurons and Glia

Cell excitability, ion channels, metabolism, mitochondria, RNA, epigenetics, transcription/translation, cell types (excitatory neurons, interneurons, astrocytes, oligodendrocyte lineages, microglia).

2. Synapses and Circuits

A. Cell-Cell Communication

Synaptic transmission, neurotransmitter receptors, transporters, synaptic integration, synaptic plasticity, glia-neuron interactions.

B. Synaptic and Circuit-level Understanding of Emotion and Addiction

Synaptic mechanisms underlying emotion, neural circuits involved in emotional processing, synaptic changes in addiction, reward circuits, neurotransmitter systems associated with addiction, behavioral studies.

C. Synaptic and Circuit-level Understanding of Cognition and Behavior

Synaptic and circuit mechanisms in attention, learning and memory, fear, appetitive and incentive learning, reward, working memory, decision making, etc

3. Systems and Computational Neuroscience

A. Sensory and Motor Systems

Chemical senses, vestibular system, auditory system, visual system, tactile/somatosensory system, multisensory integration, pain, motor neurons, motor control, brain-machine interface.

B. Systems-level Studies on Cognition and Behavior

Systems-level mechanisms in attention, learning and memory, fear, appetitive and incentive learning, reward, working memory, decision making, language and communication, motivation, human and/or animal studies.

C. Computational and Theoretical Neuroscience

Neuro-robotics, neural network models, brain connectivity, single-cell modeling, deep and machine learning.

4. Mechanisms of Brain Disorders

A. Degenerative Disorders

Neurodegenerative disorders (AD, PD, FTD, ALS, etc.).

B. Cognitive Disorders

Neurodevelopmental disorders (ASD, intellectual disability, schizophrenia).

C. Movement Disorders

PD, HD, ataxias, ALS, motor disorders.

D. Other Neurological Disorders

Epilepsy, ischemia, NMJ disorders, peripheral nerve diseases.

5. Neuroengineering: Novel Methods and Technology Development

A. Molecular/genetic technique

(CRISPR/Cas9, viral vectors, transcriptomics/proteomics, single-cell techniques, iPSCs/organoids), anatomy (tracing, connectomics)

B. imaging (fMRI, PET, MR, ultrasound, probes, LM, EM), electrophysiology (EEG, MEA, silicon probes), intervention methods (stimulation, pharmacology, nanoparticles, delivery systems, optogenetics, chemogenetics, TMS/tDCS, gene therapy), neuromorphic engineering, nanobody, software tools.

6. Translational and Clinical Neuroscience

A. Neuroscience for Clinical Applications

Neurodegenerative disorders (AD, PD, FTD, ALS, etc.), Neurodevelopmental disorders (ASD, intellectual disability, schizophrenia), PD, HD, ataxias, ALS, motor disorders, Epilepsy, ischemia, NMJ disorders, peripheral nerve diseases, etc.

B. Drug Development for Neurological Disorders

Drug Development (Identification of novel drug targets, preclinical drug screening, clinical trials, repurposing existing drugs for neurological conditions), Neuropharmacology (Mechanisms of drug action in the nervous system, pharmacokinetics and pharmacodynamics in CNS disorders, drug-receptor interactions, development of CNS-active compounds), Biomarkers (Identification and validation of biomarkers for disease progression and treatment response, biomarker-guided drug development), Neuroprotective Agents (Development of compounds that protect neuronal cells from injury and degeneration, studies on neuroprotection mechanisms, therapeutic strategies for neuroprotection), Nanotechnology in Drug Delivery (Nanoparticles for targeted drug delivery, crossing the blood-brain barrier, nanomedicine applications in neuroscience, optimization of delivery systems for CNS drugs)